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Researches Classified – Panel Awards – Surgical

The effect of botulinum toxin type A injection in the viability of dorsal flap in rats

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Purpose: Botulinum toxin A (BoNTA) increased the viability of skin flap in healthy rats. Most of the studies injected this substance some days (7-15) before the flap surgery. This treatment is used only for elective surgery, there was no data about the efficacy of BontA when injected in the surgical period. This study aimed to analyze the effect of BontA on the viability of Random flap in a intra surgical injection.

Methods: Twenty male Wistar rats (250–300 g) were randomly divided into four groups: saline injection 15 days prior the surgery (G1), BoNTA injection 15 days prior the surgery (G2), saline injection intraoperative period(G3), BoNTA injection intraoperative (G4). A dorsal cutaneous flap (3×10cm) was performed. Survival area and total area of the flaps were measured. Lumen diameter, external arterial diameter and lumen/wall thickness ratio were recorded.

Results: Viable area increased in Bonta 15days group when compared to saline-15days ($1080.7 \pm 307.5 \text{ mm}^2$ vs. $1594.5 \pm 419.7 \text{ mm}^2$, $p=0.01$) and in the Bonta –intraoperative injection when compared to saline intraoperative injection ($1133.3 \pm 462.0 \text{ mm}^2$ vs. $1389.9 \pm 320.4 \text{ mm}^2$, $p=0.014$). The ratio viable area/total area showed similar results (G1 versus G2, 0.43 vs. 0.74; $p<0.001$, respectively) and G3 versus G4 (0.44 vs. 0.61 $p=0,04$). We did not find any difference in the microscopic analysis (lumen diameter, external arterial diameter and lumen/wall thickness ratio).

Conclusion: BoNTA injected fifteen days before the surgery increased skin flap viability. However, BontA injected intraoperative time did not increased the flap viability.

Keywords: Botulinum toxin A; Skin flap; Rats.